window W from 400 to 500 octets. The parameter Diff is then calculated by the difference:

Diff = *NoSeqAck* - *NoSeqData* = 201-401 = -200;

As this value is negative, it can not correspond to a volume of data passing through the down link of the connection. The modified value of the window size notified by the receiver is given by:

Wa = Min (*Lim*,Wa) = Min (300,500) = 300.

Put another way, the window size Wa notified in the acknowledgement is modified so that it is reduced from 500 to 300 octets. In other words, the increase in the transmission window W of the connection has been rejected and, on the contrary, the window size W is reduced from 400 to 300 because of the new value for the notified window size Wa obtained in accordance with the invention. In effect, the method proposed by the invention is based on the assumption that the network can not absorb any more data, that only the 300 octets of the queue Fs are available to absorb the data of the window W and that it is therefore necessary to limit the size of the window W to the threshold size *Lim* of the queue Fs.

It should be pointed out that the mechanism controlling the notified window size proposed by the invention is of advantage because it does not require any explicit indication about the transmission rate of the connection. Furthermore, it is compatible with the mechanisms used to control the window size at the level of the receiver, such as the slow start, congestion avoidance, fast transmit and fast recovery algorithms.

CLAIMS

1. Method of controlling the flow of at least one TCP connection between a sender (10) and a receiver (20), of the type which consists in controlling, at the level of a given multiplexing node across which the TCP segments pertaining to the connection pass, a parameter for the window size (Wa) contained in the acknowledgement segments returned by the receiver,

wherein the method comprises the steps of:

a) receiving (100) an acknowledgement from the receiver on the up link (receiver to sender) of the connection at the level of said given multiplexing node;

b) controlling (200-600) a window size parameter (Wa) contained in said acknowledgement segment on the basis of the difference (Diff) between, firstly, a first context value (*NoSeqData$_i$*) associated with the TCP connection, defined as being the sequence number of the last segment that was transmitted from said given multiplexing node on the down link (sender to receiver) of the connection, to which the length of said segment is added, and, secondly, the sequence number indicated in said acknowledgement segment;

c) transmitting (700) the acknowledgement segment to the sender on the up link of the connection from said multiplexing node with the window size parameter (Wa) thus controlled.

2. Method as claimed in claim 1, wherein the TCP connection is established across a flow controlled network (30).

3. Method as claimed in claim 2, wherein the given multiplexing node is a flow control point (Pcd) of the flow controlled network (30).

4. Method as claimed in claim 3, wherein the flow control point (Pcd) co-operates with a memory which may hold a queue (Fs) associated with the connection, through which data segments transmitted by the sender on the down link of the connection pass, and wherein step c) consists in controlling, on the basis of said difference (Diff), the window size parameter (Wa) present in said acknowledgement segment so as to keep the volume of data stored in the queue (Fs) below a second context value (*Lim*) associated with the TCP connection.

5. Method as claimed in one of the preceding claims, wherein the given multiplexing node is located as close as possible to the sender (10).

6. Method as claimed in one of claims 2 to 4, wherein the given

multiplexing node is located at an interface of the flow controlled network (30).

7. Method as claimed in claim 4, wherein step b) consists, firstly, in generating (200-400) a control parameter (Diff) equal to said difference between the first context value (*NoSeqData*$_i$) associated with the TCP connection and the sequence number indicated in the acknowledgement section, and, secondly, in controlling (500-600) the window size parameter (Wa) contained in the acknowledgement segment on the basis of the rule:

either Wa=Min (Diff + *Lim*, WA) if Diff ≥ 0

or Wa=Min (*Lim*, Wa) if Diff < 0

where Wa is said window size parameter,

Diff is said control parameter,

Min is the minimum function,

and *Lim* is said second context value associated with the connection.

8. Method as claimed in one of the preceding claims, wherein at step b), the second context value and/or the first context value are read from a context memory (MC).

9. Method as claimed in claim 8, wherein the context memory (MC) stores the first and second context values of each of the TCP connections established across the flow controlled network (30).

10. Method as claimed in one of claims 8 or 9, wherein the first context value associated with a given connection is updated in the context memory whenever a data segment is received from the sender at the level of said given node on the down link of this connection.

11. Method as claimed in any one of claims 4 to 10, wherein the second context value (*Lim*) associated with the TCP connection is determined when the TCP connection is established.

12. Method as claimed in claim 11, wherein the second context value (*Lim*) associated with the TCP connection is determined on the basis of a maximum segment size parameter (MSS) associated with this connection.

13. Method as claimed in claim 12, wherein the second context value (*Lim*) associated with the TCP connection is higher than the value of said maximum segment size parameter (MSS) associated with this connection.

14. Method as claimed in one of claims 3 to 13, wherein the flow control point (Pcd) is located as close as possible to the sender (10).

15. Method as claimed in one of the preceding claims, wherein steps a) to c) are run in equipment providing an inter-connection between a local network (50) and a flow controlled network (30) across which the TCP connection is established.

16. Method as claimed in one of the preceding claims, wherein steps a) to c) are run for each acknowledgement segment received by said given node.

17. Method as claimed in any one of the preceding claims, wherein at step c), the acknowledgement segment is transmitted immediately.

18. Flow control unit for at least one TCP connection between a sender (10) and a receiver (20), comprising:

- means for receiving TCP data segments arriving from the sender (10) and transmitting them to the receiver (20) on the down link (sender to receiver) of the TCP connection and for determining, on the basis of each data segment thus transmitted, a first quantity indicative of the rank, within a data stream transmitted on the down link of the TCP connection, of a first data element to be transmitted to the receiver (20) in a next data segment;

- means for receiving TCP acknowledgement segments from the receiver (20) and transmitting them to the sender (10) on the up link (receiver to sender) of the TCP connection and for extracting from each TCP acknowledgement segment received a second quantity indicative of the rank, within said data stream, of a next data element anticipated by the receiver (20); and

- regulating means for controlling, on the basis of the difference between said first quantity and said second quantity, a window size parameter

(Wa) contained in said TCP acknowledgement segment received, before transmitting said TCP acknowledgement segment to the sender (10).

19. Flow control unit as claimed in claim 18, further comprising a memory for holding a queue of data segments received from the sender (10) and to be transmitted to the receiver (20) on the down link of the TCP connection across a flow controlled network (30) and in that the control of said window size parameter (Wa) applied by the regulating means includes limiting said parameter to a value at most equal to the sum of said difference and a maximum size set for the queue in the memory.

20. Inter-connecting equipment (40) between a first network (50) and a second network (30), comprising a flow control unit as claimed in any one of claims 18 or 19.